

CLAIMS

I Claim

- 1 1. A method comprising:
2 delivering an arteriogenic factor to a vessel region in a medically effective
3 manner to structurally enlarge an existing blood vessel.
- 1 2. The method of claim 1 wherein said delivery comprises providing said
2 arteriogenic factor to said vessel region for a duration ranging from about one week to
3 about five weeks.
- 1 3. The method of claim 1 further comprising providing a second delivery of said
2 arteriogenic factor to said vessel region at about 3 to about 10 days after said
3 delivering.
- 1 4. The method of claim 1 wherein said delivery comprises:
2 providing a syringe to accommodate said arteriogenic factor; and
3 advancing said arteriogenic chemical factor from said syringe to said vessel
4 region.
- 1 5. The method of claim 1 wherein said delivery comprises:
2 providing a needle catheter to accommodate said arteriogenic factor; and
3 advancing said arteriogenic factor from said needle catheter to said vessel region.

1 6. The method of claim 1 wherein said delivery comprises:
2 providing a porous balloon catheter having a porous balloon to accommodate
3 said arteriogenic factor; and
4 advancing said arteriogenic factor from said porous balloon to said vessel
5 region via pores of said porous balloon.

1 7. The method of claim 1 wherein said arteriogenic factor is selected from a group
2 consisting of an arteriogenic chemical factor, an arteriogenic physical factor, and an
3 arteriogenic thermal factor.

1 8. The method of claim 7 wherein said arteriogenic physical factor is a needle
2 catheter, said delivery comprising advancing a needle of said needle catheter to said
3 vessel region, said needle to puncture said vessel region.

1 9. The method of claim 7 wherein said delivery comprises providing said
2 arteriogenic chemical factor to said vessel region as part of a degradable microparticle.

1 10. The method of claim 7 wherein said arteriogenic thermal factor includes a
2 catheter with a distal portion cooled to between about 0° C and about 10° C.

1 11. The method of claim 7 wherein said arteriogenic thermal factor includes a
2 catheter with a distal portion heated to a range from about 40° C to about 90° C.

1 12. The method of claim 7 wherein said vessel region is a tissue of an extravascular
2 vessel area, said arteriogenic chemical factor in an amount of between about 0.01
3 nanograms and about 1 mg per gram of said tissue.

1 13. The method of claim 7 wherein said vessel region is a tissue of an intramural
2 vessel area, said arteriogenic chemical factor in an amount of between about 0.01
3 nanograms and about 1 mg per gram of said tissue.

1 14. The method of claim 1 wherein said vessel region is an intravascular vessel area
2 including a flow of blood.

1 15. The method of claim 14 wherein said delivery comprises:
2 positioning said arteriogenic factor at a first portion of said vessel region; and
3 releasing said arteriogenic factor, said arteriogenic factor to reach a second
4 portion of said vessel region via said flow of blood.

1 16. The method of claim 14 wherein said arteriogenic factor is an arteriogenic
2 chemical factor in an amount between about 10 picograms and about 1 microgram per
3 ml of said blood in said intravascular vessel area.

1 17. The method of claim 7 wherein said arteriogenic chemical factor is combined
2 with a performance enhancing additive to promote enlargement of said existing blood
3 vessel.

1 18. The method of claim 17 wherein said performance enhancing additive enhances
2 stability of said arteriogenic chemical factor.

1 19. The method of claim 7 wherein said arteriogenic chemical factor is selected
2 from a group consisting of an inflammatory, NG-nitro L-arginine methyl ester,
3 asymmetric dimethyl arginine, Basic Fibroblast Growth Factor, and a gene construct.

1 20. The method of claim 19 wherein said inflammatory is selected from a group
2 consisting of classic mediators, blood-borne molecules, cell bound molecules,
3 endotoxins, and heavy metal compounds.

1 21. The method of claim 20 wherein said classic mediators are selected from a
2 group consisting of histimine and bradykinin.

1 22. The method of claim 20 wherein said blood-borne molecules are selected from a
2 group consisting of compliment factor 5A, Platelet Activating Factor, a prostaglandin, a
3 leukotriene, a cytokine, and Monocyte Chemoattractant Protein.

1 23. The method of claim 20 wherein said cell bound molecules are selected from a
2 group consisting of an intracellular adhesion molecule, a vascular cell adhesion
3 molecule, a selectin, and a leukocyte integrin.

1 24. A method of structurally enlarging an existing blood vessel, said method
2 comprising:
3 advancing a distal portion of a catheter to said existing blood vessel; and

4 delivering an arteriogenic factor in a medically effective manner to said existing
5 blood vessel via said catheter.

1 25. The method of claim 24 wherein said arteriogenic factor is selected from a
2 group consisting of an arteriogenic chemical factor, an arteriogenic physical factor, and
3 an arteriogenic thermal factor.

1 26. The method of claim 24 wherein said existing blood vessel has been
2 angiogenically induced.

1 27. An apparatus comprising:
2 an elongated catheter body; and
3 a distal portion of said elongated catheter body, said distal portion configured to
4 deliver an arteriogenic factor to a vessel region in a medically effective manner to
5 structurally enlarge an existing blood vessel.

1 28. The apparatus of claim 27 further comprising a catheter balloon at said distal
2 portion.

1 29. The apparatus of claim 28 wherein said catheter balloon is equipped with pores
2 for delivery of said arteriogenic factor.

1 30. The apparatus of claim 27 further comprising a needle at said distal portion.

1 31. The catheter of claim 30 wherein said needle is configured to puncture a vessel
2 surface of said existing blood vessel when said distal portion is adjacent thereto.

- 1 32. The catheter of claim 30 wherein said needle is configured to release said
- 2 arteriogenic factor from said distal portion to said vessel region.

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